Space Weather Forecast

Issued on Thursday, 02 March 2023 at 01:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Likelihood of Moderate flares, with slight chance of Strong activity.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Moderate, with one Moderate class flare observed from a large and magnetically complex region in the northwest quadrant of the visible disc. A further weaker region in the southeast produced a high energy Common-class flare early in the period. A CME from the southwest is currently being analysed to establish whether this is Earth-directed. In addition to a number of weak and stable regions on the visible disc, three new regions have rotated onto the northeast quadrant through the last 24 hours. Their location makes detailed analysis difficult, but they will be monitored for further development. No further possible Earth-directed CMEs have been observed on available imagery.

Solar Wind / Geomagnetic Activity: Solar wind speeds at Earth, have declined from strong to elevated levels through the last 24 hours, as a fast solar wind which has been affecting the Earth, eases. Total magnetic field strength has been weak, with the important north-south component of the magnetic field also weakly positive. Geomagnetic activity started Unsettled, but has been Quiet for much of the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles has been has returned to background levels through the last 24 hours.

Four-Day Space Weather Forecast Summary
Solar Activity: Low to Moderate activity is expected with a slight chance of Strong activity, mainly from the large and complex region in the northwest quadrant.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are forecast. An ongoing fast solar wind is expected to wane to background during 02 Mar. A further fast solar wind is then forecast to connect with Earth on 04 March, possibly producing strong solar winds. This is then likely to continue through 04 and 05 Mar. Geomagnetic activity is expected to be mainly Quiet on 02 and 03 Mar, then increase to Active with a chance of G1/Minor Storms on 04 Mar. A reduction in activity is then possible later on 05 Mar.

Energetic Particles / Solar Radiation: The count rate of energetic protons is expected to fall to background with only a slight chance of further enhancements. These are most likely to be due to any flares from the large sunspot in the northwest.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	50	50
Very Active	R3 to R5 X	No	20	20	15	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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